



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,323	12/12/2003	Keith Alan Moriarty	92.1048	2266

7590 01/23/2006

Tim W. Curington
Stonehouse Technology Centre
Brunel Way, Stroudwater Business Park
Stonehouse, GL 10 3SX
UNITED KINGDOM

EXAMINER

GAY, JENNIFER HAWKINS

ART UNIT

PAPER NUMBER

3672

DATE MAILED: 01/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/735,323

Applicant(s)

MORIARTY ET AL.

Examiner

Jennifer H. Gay

Art Unit

3672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/13/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the abstract has been constructed as a single run-on sentence instead of a narrative paragraph that includes multiple sentences. The abstract further includes the implied phrase "is provided". Correction is required. See MPEP § 608.01(b).

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 4, 7-9, 14, 15, and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Hahn et al. (US 6,419,033).

Regarding claim 1: Hahn et al. discloses a directional casing drilling system. The system includes the following features:

- A casing string **120**.
- A mud motor **149** operatively coupled to the casing string.
- A rotary steerable system **145** operatively coupled to the mud motor.
- A drill bit **131** operatively coupled to the rotary steerable system.

Regarding claims 2, 9: The system further includes a underreamer **132** disposed below the casing string and above the drill bit and being operatively coupled to the casing string.

Regarding claim 4: The rotary steerable system is a push-the-bit system.

Regarding claim 7: The system further includes a casing latch **152**.

Regarding claim 8: Hahn et al. discloses a direction casing drilling system that includes the following features:

- A casing string **120** that includes an integral bend proximate a lower end of the casing string (Figure 1).
- A mud motor **149** operatively coupled to the casing string.
- A drill bit **131** operatively coupled to the rotary steerable system.

Regarding claim 14: Hahn et al. further discloses a method for using the above system. The method involves rotating the casing string at a first speed, rotating the drill bit at a second speed via the motor (3:54, 55; due to the length of the casing string and the friction imparted thereon, the casing would inherently rotate at a slower speed than the drill bit that is rotated by the mud motor), changing the direction of the bit by operating the rotary steerable system (4:48-50).

Regarding claim 15: The method further involves enlarging a pilot hole **141** drilled by the drill bit using the underreamer.

Regarding claims 17-20: The method further involves measuring the drill bit azimuth and inclination, positioning the casing to point in the desired azimuthal direction, and using the mud motor to rotate the drill bit to drill a straight path (4:40-5:22).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3, 5, 6, 11-13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al. in view of Chen et al. (US 6,877,570).

Regarding claims 3, 16: Hahn et al. discloses all of the limitations of the above claim(s) except for the system including a casing shoe cutter located at the bottom end of the casing string.

Chen et al. discloses a system similar to that of Hahn et al. The system further includes a casing shoe cutter at a bottom end of the casing string (5:58-61).

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the system of Hahn et al. to include the casing shoe cutter taught by Chen et al. in order to have been able to cut off the blades of the underreamer instead of retracting them.

Regarding claim 5: Hahn et al. discloses all of the limitations of the above claim(s) except for the system being a point-the-bit system.

The rotary steerable system of Chen et al. is a point-the-bit system.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the system of Hahn et al. to be a point-the-bit system as taught by Chen et al. in order to have used a more accurate wellbore deviation method that was controlled by downhole sensors and measurement devices.

Regarding claims 6, 11, 12: Hahn et al. discloses all of the limitations of the above claim(s) except for the system including a measurement while drilling collar located above the mud motor.

The system of Chen et al. further includes a measurement while drilling collar 44 disposed above the mud motor and operatively coupled to the casing string.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the system of Hahn et al. to include a measurement while drilling collar as taught by Chen et al. in order to have been able to monitor downhole conditions and the direction of the drill bit.

Regarding claim 13: Hahn et al. discloses all of the limitations of the above claim(s) except for the system including an off-set centralizer located within the lower end of the casing string.

The system of Chen et al. further includes an offset centralizer 52 disposed inside the casing string at a lower end thereof.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the system of Hahn et al. to include an off-set centralizer as taught by Chen et al. in order to have ensured proper positioning of the remainder of the system relative to the casing string.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hahn et al. in view of Parant (US 4,842,081).

Hahn et al. discloses all of the limitations of the above claims except for the mud motor being disposed within the casing.

Parant discloses a method and system for drilling with casing. Parant further teaches placing a mud motor 22 used to rotate the bit within the casing 1.

It would have been considered obvious to one of ordinary skill in the art, at the time the invention was made, to have modified the system and method of Hahn et al. such that the mud motor was located within the casing as taught by Parant in order to have protected the motor from contact with the wellbore wall.

Response to Arguments

8. In view of applicant's amendment, the objection to the drawings has been withdrawn.
9. In view of the Terminal Disclaimer filed December 13 2005, the double patenting rejection of claims 1-4, 6, 7, and 14 has been withdrawn.

10. The objection to the abstract has been repeated, as the amendment thereto did not eliminate the single, run-on sentence structure of the abstract. The abstract should be constructed as a narrative paragraph; a paragraph includes more than one sentence. Further, the amendment added the implied phrase “is provided”.

11. Applicant’s arguments filed December 13 2005, with respect to the Chen et al. reference applied under 35 USC 102 have been fully considered and are persuasive. The 35 USC 102(e) rejection of claims 1-3, 5-9, 11-16, and 18 as being anticipated by Chen et al. has been withdrawn.

12. Applicant's arguments filed December 13 2005 have been fully considered but they are not persuasive.

Applicant has argued that Hahn et al. does not teach a casing string operatively coupled to a mud motor as casing **112** is not connected to the system. While the examiner agrees that casing **112** is not operatively connected to the system, casing **120** is (5:23-39). The examiner inadvertently indicated the wrong element in the rejections of the previous Office Action.

Applicant has argued that Hahn et al. does not inherently teach rotating the casing a speed lower than that of the mud motor as Hahn et al. makes no mention of the relative speeds of the two elements. While the examiner agrees that Hahn et al. does not specifically recite the relative speeds of the two elements, it is noted that such a recitation would eliminate the need for an inherency statement. Further, Hahn et al. does teach that the casing **120**, and drilling assembly **130**, is rotated from the surface (3:8-10) and that the bit may be further rotated using a downhole motor (3:65-4:2). The use of two different rotation means in conjunction with the length of the casing string would result in the casing rotating at a different speed than the drill bit.

Applicant has argued that the underreamer **132** is attached at a distance from the casing **112** thus cannot be said to be coupled thereto. Firstly, the use of the term “coupled” does not indicate that two elements are in close proximity to each other or that they are directly connected. Two elements may be spaced a substantial distance and be

considered to be indirectly coupled or connected. Secondly, element 120 should have been used to indicate the casing string and it can be clearly seen that element 120 is coupled to the underreamer.

Applicant has argued that Hahn et al. does not teach that the casing string 112 is positioned such that a bend in a lower section points in a desired azimuthal direction. The examiner repeats that element 120 should have been used to indicate the casing string.

Applicant has argued that Parant cannot be combine with Hahn et al. because Parant is related to horizontal or vertical drilling while Hahn et al. relates to steerable or controlled directional drilling and the field of horizontal or vertical drilling does not require a steerable system. While the examiner agrees that horizontal or vertical drilling does not *require* a steerable system such systems are used in all types of drilling thus applicant's argument is moot.

Applicant has further argued that one of ordinary skill in the art would not have looked to the field of horizontal or vertical drilling when designing a steerable system. The examiner disagrees and notes that when designing a drilling with casing system, one of ordinary skill in the art would have looked at all aspects and variations of this technology.

Applicant has further argued that there is no motivation to combine the two references because the combination would have destroyed the function of Hahn et al. The examiner disagrees and notes that having a directional control system does not preclude combination as Parant was used merely to teach a motor located within the casing when drilling with casing.

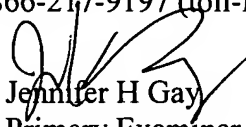
Conclusion

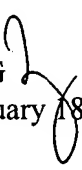
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer H. Gay whose telephone number is (571) 272-7029. The examiner can normally be reached on Monday-Thursday, 6:30-4:00 and Friday, 6:30-1:00.

Art Unit: 3672

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bagnell can be reached on (571) 272-6999. The fax phone number for the organization where this application or proceeding is assigned is 571-272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jennifer H Gay
Primary Examiner
Art Unit 3672

JHG 
January 18, 2006